

CONFIDENTIAL

File 605/2.

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SEP 21 25X1

PROGRESS REPORT  
FOR  
H OF SEPTEMBER 1959

BROADBAND LOG PERIODIC ANTENNA

Purpose: The purpose of this project is to design and develop a high gain unidirectional antenna. The antenna is to fit within a prescribed volume and have a desired frequency range of 30-600 mc.

Personnel: Electrical Engineer:   
Mechanical Engineer: 

25X1

Status: This EP has been closed out.

25X1

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PROGRESS REPORT  
FOR  
MONTH OF AUGUST 1959

BROADBAND LOG PERIODIC ANTENNA

Purpose: The purpose of this project is to design and develop a high gain unidirectional antenna. The antenna is to fit within a prescribed volume and have a desired frequency range of 30-600 mc.

25X1

Personnel: Electrical Engineer:  
Mechanical Engineer:



Status: The final engineering report and instruction book for the CS-8 antenna have been delivered to the customer. This concludes the scope of the EP and therefore it will be closed out as soon as possible.

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PROGRESS REPORT  
FOR  
MONTH OF JULY 1959

BROADBAND LOG PERIODIC ANTENNA

Purpose: The purpose of this project is to design and develop a high gain unidirectional antenna. The antenna is to fit within a prescribed volume and have a desired frequency range of 30-600 mc.

Personnel: Electrical Engineer:  
Mechanical Engineer:



25X1

Status: The final engineering report and the instruction book for the CS-8 antenna have been completed and will be mailed to the customer within a week. The EP will then be closed out.

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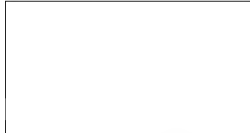
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PROGRESS REPORT  
FOR  
MONTH OF JUNE 1959

BROADBAND LOG PERIODIC ANTENNA

Purpose: The purpose of this project is to design and develop a high gain unidirectional antenna. The antenna is to fit within a prescribed volume and have a desired frequency range of 30-600 mc.

Personnel: Electrical Engineer:  
Mechanical Engineer:



25X1

Status: Final engineering report and instruction book are now in for print and should be available by July 14, 1959.

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PROGRESS REPORT  
FOR  
MONTH OF MAY 1959

BROADBAND LOG PERIODIC ANTENNA

Purpose: The purpose of this project is to design and develop a high gain unidirectional antenna. The antenna is to fit within a prescribed volume and have a desired frequency range of 30-600 mc.

Personnel: Electrical Engineer:  
Mechanical Engineer:



25X1

Status: Pattern measurements were performed during this past month in the range from 30 to 55 mc. The results which were obtained indicated that the cross polarization becomes the dominant polarization below the lower cut off frequency.

The final engineering report and the instruction book will be released to the publication department within the next few days.

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PROGRESS REPORT  
FOR  
MONTH OF APRIL 1959

BROADBAND LOG PERIODIC ANTENNA

**Purpose:** The purpose of this project is to design and develop a high gain unidirectional antenna. The antenna is to fit within a prescribed volume and have a desired frequency range of 30-600 mc.

**Personnel:** Electrical Engineer:  
Mechanical Engineer:

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25X1

**Status:** Due to the priority of other projects, the pattern measurements and gain measurements were not performed. It is hoped that within the next two weeks the measurements can be performed.

PROGRESS REPORT  
FOR  
MONTH OF MARCH 1959

BROADBAND LOG PERIODIC ANTENNA

Purpose: The purpose of this project is to design and develop a high gain unidirectional antenna. The antenna is to fit within a prescribed volume and have a desired frequency range of 30-600 mc.

Personnel: Electrical Engineer:  
Mechanical Engineer:



25X1

Status: The antenna was received from the customer approximately the first part of April. Arrangements will be made during April to determine the operation of the antenna between 30 and 55 mc. The minor modifications have been made. It should be possible to return the antenna to the customer approximately the first of May.

PROGRESS REPORT  
FOR  
MONTH OF FEBRUARY 1959

BROADBAND LOG PERIODIC ANTENNA

Purpose: The purpose of this project is to design and develop a high gain unidirectional antenna. The antenna is to fit within a prescribed volume and have a desired frequency range of 30-600 mc.

Personnel: Electrical Engineer:  
Mechanical Engineer:



25X1

Status: No work done during the past month. Still waiting for the return of the antenna for redesign of certain parts and completion of instruction book.



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PROGRESS REPORT  
FOR  
MONTH OF JANUARY 1959

BROADBAND LOG PERIODIC ANTENNA

Purpose: The purpose of this project is to design and develop a high gain unidirectional antenna. The antenna is to fit within a prescribed volume and have a desired frequency range of 30-600 mc.

Personnel: Electrical Engineer:  
Mechanical Engineer:



25X1

Status: The antenna has been delivered to and tested by the customer. Except for a few minor mechanical modifications, the antenna was completely satisfactory. It will be returned for modifications and pictures. The antenna will be returned to the customer with the instruction book sometime during the latter part of March.

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BROADBAND LOG PERIODIC ANTENNA

Purpose: The purpose of this project is to design and develop a high gain unidirectional antenna. The antenna is to fit within a prescribed volume and have a certain frequency range.

Personnel: Electrical Engineer:  25X1  
Mechanical Engineer:

Status: During the past month the antenna was constructed and partially tested. Final loading was decided upon and a reduction in size of approximately 18 percent was observed. The reduction in size came at the expense of approximately one db in gain and several db in front to back ratio throughout the region where the antenna was operating below cut-off. (cut-off being where the longest element is one half wavelength)

Patterns of the full scale antenna have not been taken as yet and when patterns are taken a complete run will not be possible since our pattern range facilities do not extend to the lower frequencies in question. Some preliminary impedance data has been obtained with the antenna exhibiting a characteristic impedance of 135 ohms throughout the frequency range of interest. It is not known as yet whether this will be the final impedance level. Some time will be spent in an effort to change the level to 150 ohms. The reason being to obtain a 2:1 VSWR with a 150 ohm balanced line.

Two shipping boxes of prescribed size were constructed, but it was found that the entire unit (antenna and supporting structure) can be placed into one box. It is not known if this

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is suitable for the purpose intended but this can be decided at a later date.

Future Plans: The design of the impedance tapered line and possible change of characteristic impedance are scheduled for the forthcoming period.

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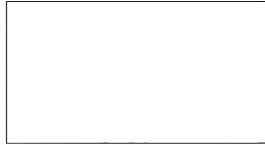
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BROADBAND LOG PERIODIC ANTENNA

Purpose: The purpose of this project is to design and develop a high gain unidirectional antenna. The antenna is to fit within a prescribed volume and have a desired frequency range of 30-600 mc.

Personnel: Electrical Engineer:  
Mechanical Engineer:



25X1

Status: During this past month the only work done was that of assisting publications in preparing an instruction book, and also the writing of a final engineering report. This work should all be completed by the end of January.

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BROADBAND LOG PERIODIC ANTENNA

**Purpose:** The purpose of this project is to develop a broadband high gain unidirectional antenna. The antenna is to fit within a prescribed volume and have a certain frequency range.

**Personnel:** Electrical Engineer:  25X1  
Mechanical Engineer:

**Status:** During the last month, the design parameters for the antenna were chosen. Drawings are being made in preparation for construction of the antenna. Final loading of the antenna still has not been established in hopes of further lowering the low frequency limit of the antenna.

**Future Plans:** Final drawing will be made and the antenna will be constructed. The amount of loading will also be established. Both coaxial and balanced feed systems will be tested to determine their effectiveness. A coaxial tapered line will be used to keep the VSWR of the coaxial feed down to 3:1 or less.

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*July 58*  
*T.C. - 2*BROADBAND LOG PERIODIC ANTENNA

**Purpose:** The purpose of this project is to develop a broadband high gain unidirectional antenna. The antenna is to fit within a prescribed volume and have a certain frequency range.

**Personnel:** , **Electrical Engineer:**

**Mechanical Engineer:**



25X1

**Status:** During the past month several models were constructed and investigated. Artificial loading thus far has shown we can reduce the size of the antenna without harming it's characteristics. The percent reduction has varied from 15 to 30 percent. Unfortunately the antenna with 30 percent reduction would have been the least feasible to construct.

**Future Plans:** During the coming month some time will be spent in an effort to further reduce the effective size of the antenna therefore lowering the lower frequency limit by more than 15 percent. Fabrication techniques are being investigated to keep the design of the antenna and supporting structure as simple as possible. Recent advertising literature has shown that manufactured joints can be used to assemble the elements to the boom of the antenna with great ease.

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*Full 605*  
*Task order 2*

*Office Memorandum* • UNITED STATES GOVERNMENT

TO : The Files, Contract 605, Task

25X1

FROM : James H. Babcock OC-E/R&D-EP

SUBJECT: Distribution of Final Engineering Report and Instruction Book for AN-20/CS-8 Antenna System.

1. The final engineering report has been distributed as follows:

Copies 1-3: R&D-EP  
Copy 4: R&D Laboratory  
Copy 5: Communications Engineering Library  
Copy 6: Vital Files  
Copies 7-11: OC-SPS/EA

25X1

2. The instruction book has been distributed as follows:

Copies 1-3: R&D-EP  
Copy 4: R&D Laboratory  
Copy 5: Communications Engineering Library  
Copy 6: Vital Files  
Copies 7-19: OC-SPS/EA

25X1

3. This completes the delivery of all items required under this task.

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